



# Electric Pumps

COA, COP, COV, COS, COSM, CZ



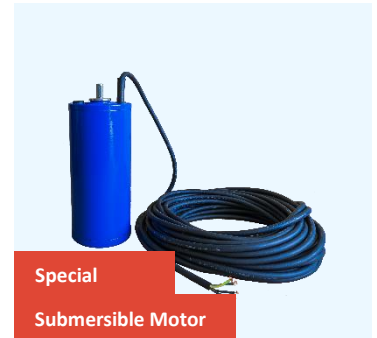
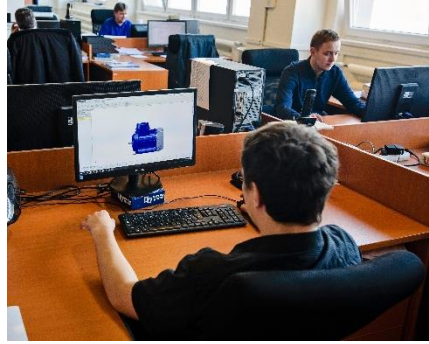
## About us.

EMP s.r.o. has been established in the Czech Republic since 1991. The Slavkov production facility was taken over from MEZ Brno during the privatisation process and the manufacturing of electric motors and electric pumps re-introduced on 1st July 1994. EMP has therefore built on the long term tradition of electric motor manufacturing in the Czech Republic. Modern technologies are being utilised during the development, manufacturing and testing of electric motors and pumps inclusive of computerised motor design facilities and factory logistics.

The goal of the Company is to satisfy the requirements of our customer base.

## Products

- Asynchronous electric motors (frame size 63- 112), inclusive of **special tailor-made design**
- Build-in stator/rotor packs (frame size up to 160)
- Immersible pumps 4COA pumps, pressure up to 40kPa (page 3)
- High pressure COV pumps, pressure up to 800kPa (page 7)
- Multistage COS and COSM pumps, pressure up to 2000kPa (page. 9 a 12)  
Gear pumps, pressure up to 1200kPa (page. 13)
- Special submersible TMZ and JMZ motors in IP68 cover





## IMMERSIBLE PUMPS

COA, COP

Page 4 - 7

Rated  
HEAD

2 - 4m

Rated  
FLOW

16-260l/min



Page 8 - 9

## HIGH PRESSURE PUMPS

COV

Rated  
HEAD

20 - 50m

Rated  
FLOW

28-60l/min



Page 10 - 12

## MULTISTAGE PUMPS

COS

Rated  
HEAD

10 - 60m

Rated  
FLOW

30-220l/min



Page 13

## MULTISTAGE PUMPS

COSM

Rated  
HEAD

48 - 215m

Rated  
FLOW

30l/min



Page 13 - 14

## GEAR PUMPS

CZ

Rated  
HEAD

30 - 120m

Rated  
FLOW

0,9-2,4l/min

# IMMERSIBLE PUMP COA & COP SERIES

## COP PUMPS

„Plastic version“



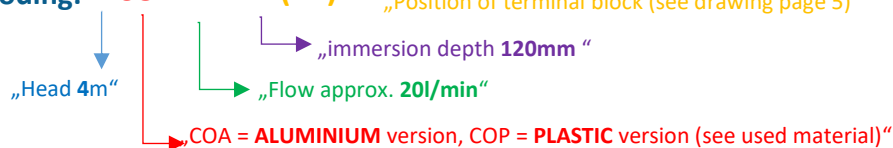
## COA PUMPS

„Aluminium version“

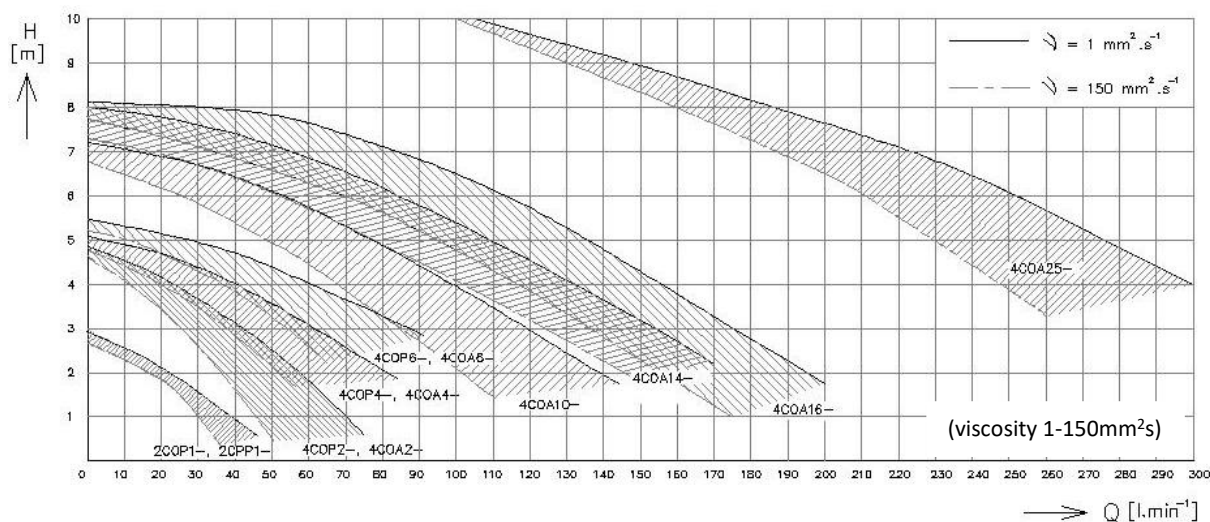


The electric pumps are equipped with a flange which enables their fitting directly on top of the tank, which contains the pumped liquid. The maximum and the minimum immersion level is shown on the dimensional drawing. The pumps must not be used for pumping of flammable or combustible liquids. The size of impurities in the pumped liquid should not exceed 0.5mm. Should larger impurities be found in the pumped liquid the pump suction opening should be equipped with a protective sieve. The standard paint finish the electric pumps are supplied with is S 2003 synthetic primer.

Example of pump coding: **4 COA 2 – 12 (P1)** → „Position of terminal block (see drawing page 5)“



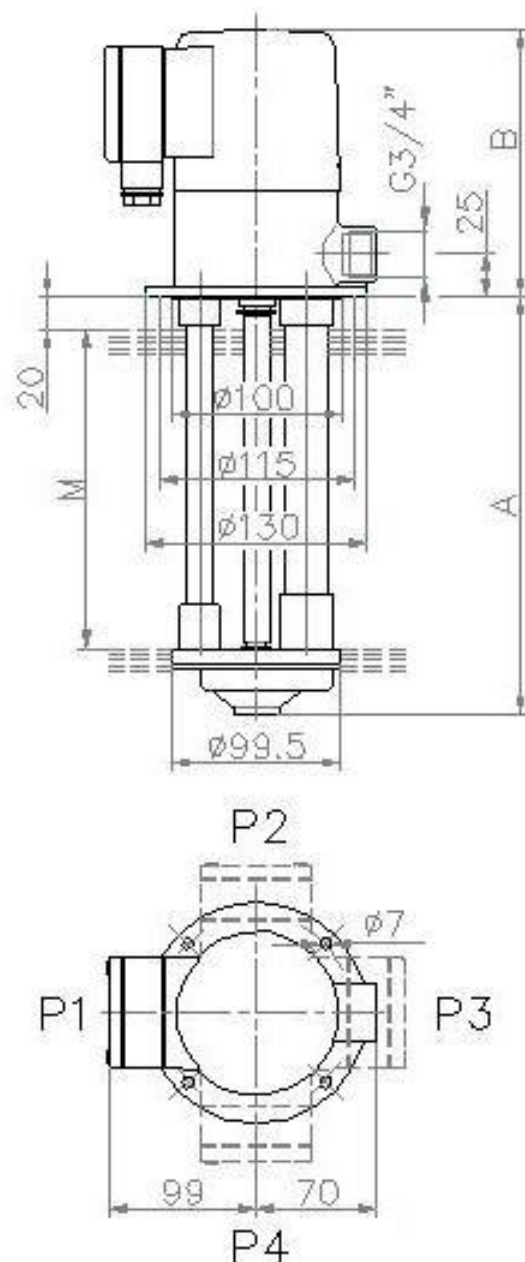
TYPE	HEAD [m]	PRESSURE [kPa]	FLOW [l/min]	POWER [kW] (at 400V, 50Hz)	CURRENT [A] (at 400V, 50Hz)	BREAKER SETTING [A] (at 400V, 50Hz)
2COP1-	2	20	16	0,050	0,14	0,22
4COP2-; 4COA2-	4	40	25	0,090	0,26	0,35
4COP4-; 4COA4-	4	40	40	0,120	0,33	0,45
4COP6-; 4COA6-	4	40	63	0,155	0,43	0,60
4COA10-	4	40	100	0,350	0,64	0,84
4COA14-	4	40	140	0,400	0,86	1,04
4COA16-	4	40	160	0,500	1,05	1,30
4COA24-	4	40	260	0,970	1,60	1,80



1m (H <sub>0</sub> )	≈ 0,1 at	= 10 kPa	≈ 0,1 bar
1 at	≈ 100 kPa	≈ 10m (H <sub>0</sub> )	≈ 0,1 MPa

## 2COP1-, 4COP2,4,6- pump dimensions

TYPE	A	B	M	Kg
2COP1-09	90	156	59	3,5
2COP1-10	100		69	3,5
2COP1-12	120		80	3,6
2COP1-14	140		100	3,6
2COP1-17	170		130	3,7
2COP1-22	220		180	3,8
2COP1-27	270		230	3,9
4COP2-09	90	156	59	3,5
4COP2-10	100		69	3,5
4COP2-12	120		80	3,6
4COP2-14	140		100	3,6
4COP2-17	170		130	3,7
4COP2-22	220		180	3,8
4COP2-27	270		230	3,9
4COP4-09	90	156	59	3,8
4COP4-10	100		69	3,8
4COP4-12	120		80	3,9
4COP4-14	140		100	3,9
4COP4-17	170		130	4
4COP4-22	220		180	4,1
4COP4-27	270		230	4,2
4COP6-09	90	171	59	4,5
4COP6-10	100		69	4,6
4COP6-12	120		80	4,6
4COP6-14	140		100	4,6
4COP6-17	170		130	4,7
4COP6-22	220		180	4,8
4COP6-27	270		230	4,9



## Used materials

POM = acetal copolymer

PA6= polyamid

TYPE	IMPELLER	CHAMBER BOTTOM	CHAMBERS	PUMP TUBES	SHAFT	
2COP1-	standard	POM	PA6 +30% Glass	PA6+ 30% Glass	1.0026	1.0060
	HV				1.4301	1.4021
4COP-	standard	POM	POA6	PA6+ 30% Glass	1.0026	1.0060
	HV				1.4301	1.4021

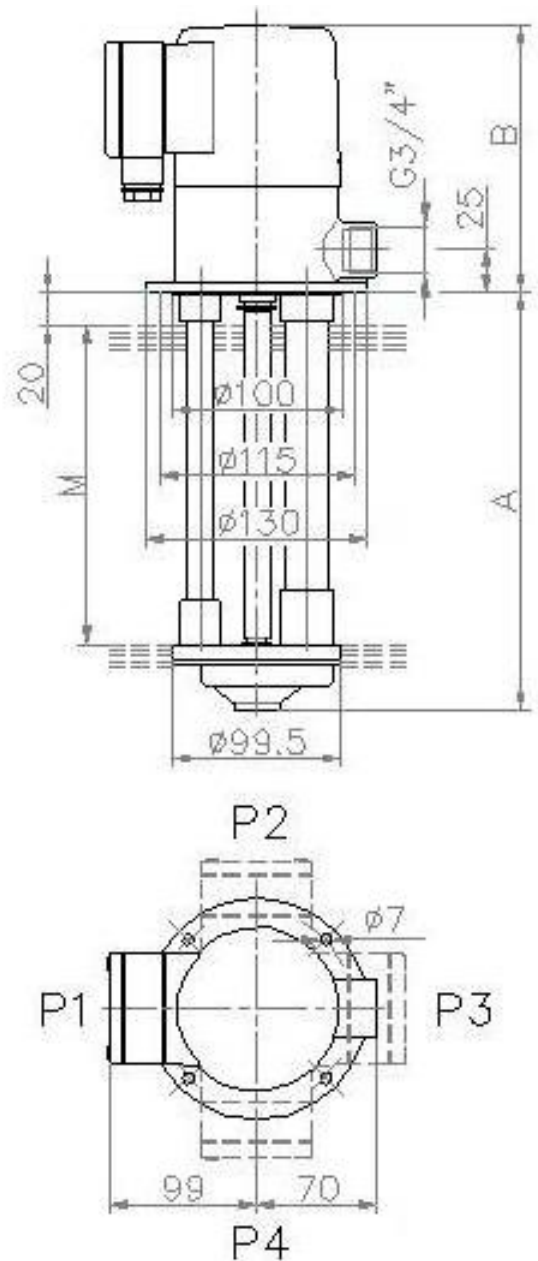
**Standard** – liquids with maximum viscosity 150mm<sup>2</sup>s<sup>-1</sup> and 0-60°C

**HV** – resists weak alkali. Maximum liquid temperature 60°C

### 4COA2,4,6- pump dimensions

TYPE	A	B	M	Kg
4COA2-09	90	156	59	3,4
4COA2-10	100		69	3,4
4COA2-12	120		80	3,5
4COA2-14	140		100	3,7
4COA2-17	170		130	3,8
4COA2-22	220		180	4,1
4COA2-27	270		230	4,4
4COA2-35*	350		310	4,9
4COA4-09	90		156	59
4COA4-10	100	69		3,5
4COA4-12	120	80		3,7
4COA4-14	140	100		3,8
4COA4-17	170	130		4
4COA4-22	220	180		4,4
4COA4-27	270	230		4,7
4COA4-35*	350	310		5,2
4COA6-09	90	171		59
4COA6-10	100		69	4,1
4COA6-12	120		80	4,3
4COA6-14	140		100	4,4
4COA6-17	170		130	4,6
4COA6-22	220		180	5
4COA6-27	270		230	5,3
4COA6-35*	350		310	5,8

\* pump body is complete single casting



### Used materials

POM = acetal copolymer

PA6= polyamid

TYPE	IMPELLER	CHAMBER BOTTOM	CHAMBER	TUBES	SHAFT
4COA2,4,6-	standard	POM / Al	Al alloy	1.0026	1.0060
	AV2			CW508L	1.4021
	AV	Bronze	Bronze	Bronze	1.4571

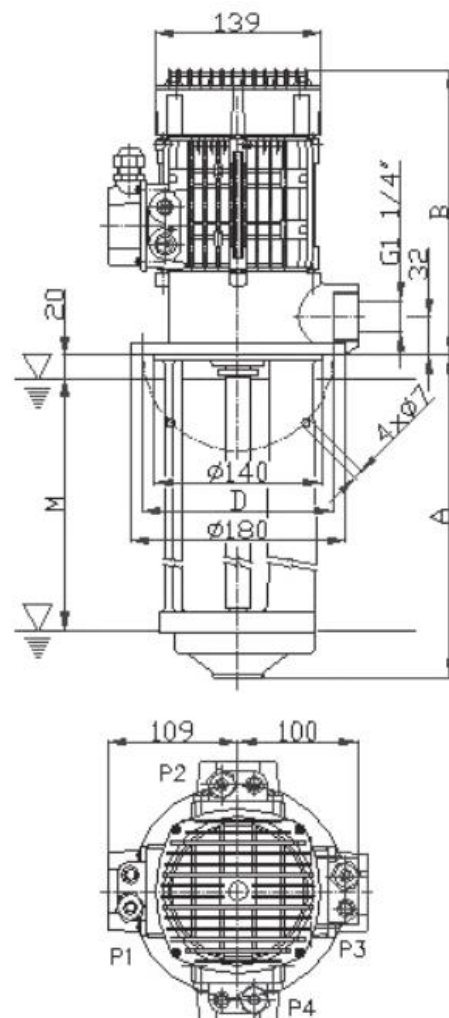
**Standard** – liquids with maximum viscosity 150mm<sup>2</sup>s<sup>-1</sup> and 0-60°C

**AV2** – stainless steel version for water 0-60°C

**AV** – Acid-resistant stainless steel version for acids with min. pH3. Temperature of pumped liquid max. 60°C

## 4COA10, 14, 16, 25 - pump dimensions

TYPE	A	B	D	M	AV2 (kg)	AV (kg)
4COA10-17	170	238	160	110	7,3	12,7
4COA10-20	200			140	7,4	13,2
4COA10-22	220			160	7,5	13,4
4COA10-27	270			210	7,6	14,2
4COA10-35	350			290	8,1	15,3
4COA14-17	170	238	160	110	7,7	13,6
4COA14-20	200			140	7,8	13,9
4COA14-22	220			160	7,9	14,1
4COA14-27	270			210	8	14,6
4COA14-35	350			290	8,5	15,7
4COA16-18	180	238	160	110	8,5	14,3
4COA16-21	210			140	8,7	14,7
4COA16-23	230			160	8,9	15
4COA16-28	280			210	9,2	15,8
4COA16-36	360			290	9,8	17,1
4COA25-18	180	246	160	90	9,3	17,7
4COA25-28	280			200	10,2	19,3
4COA25-36	360			280	10,9	20,6



## Used materials

POM = acetal copolymer

PA6= polyamid

Type	IMPELLER	CHAMBER BOTTOM	PUMP BODY	SHAFT	
4COA10,14-	standard	POM / Al	Al alloy	Al alloy	1.0060
	AV2				1.4021
	AV	Bronze	Bronze	Bronze	1.4571
4COA16,25-	standard	Al	Al alloy	Al alloy	1.0060
	AV2				1.4021
	AV	Bronze	Bronze	Bronze	1.4571

**Standard** – liquids with maximum viscosity 150mm<sup>2</sup>s<sup>-1</sup> and 0-60°C

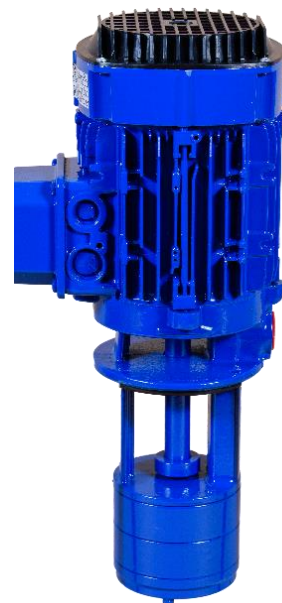
**AV2** – stainless steel version for water 0-60°C

**AV** – Acid-resistant stainless steel version for acids with min. pH3. Temperature of pumped liquid max. 60°C

# HIGH PRESSURE PUMPS COV SERIES

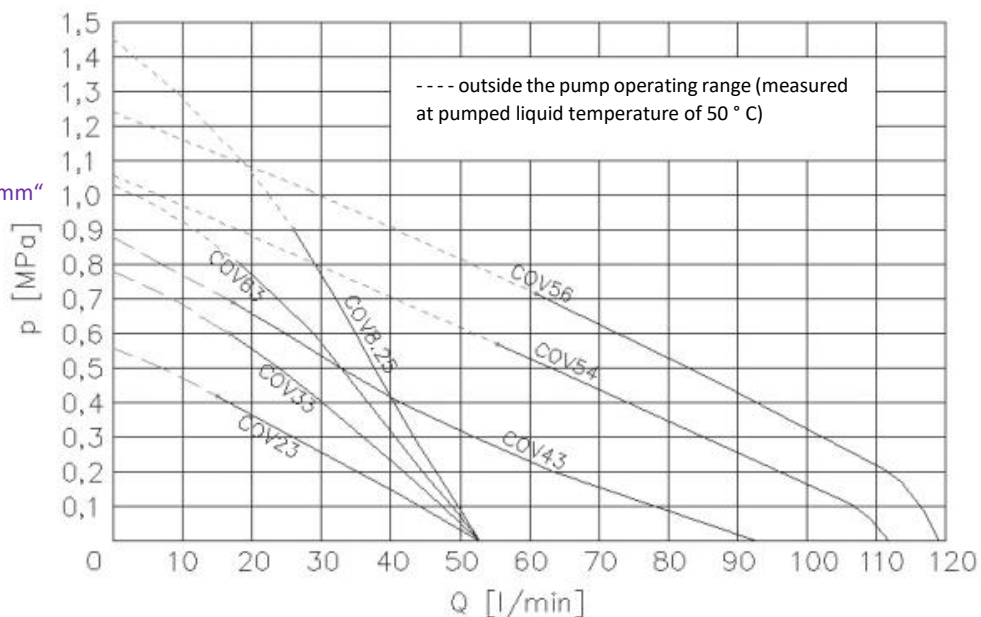
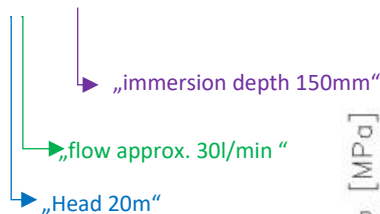
COV Pumps are designed for pumping of cooling liquid for machine tools. The viscosity of the pumped liquid can be maximum  $90\text{mm}^2\text{s}^{-1}$  ( $12^\circ\text{E}$ ) and its temperature from  $0^\circ\text{C}$  to  $60^\circ\text{C}$ . The maximum size of impurities can be  $0.1\text{mm}$ . The pumps are not suitable for pumping of flammable or combustible liquids or used in explosive environments.

The pumps are flanged suitable for fitting directly onto the tank with the pumped liquid. The maximum and minimum immersion is to be determined from the pump drawing. The pumps are not suitable for pumping of flammable or combustible liquids or used in explosive environments. The maximum size of impurities can be  $0.1\text{mm}$ . The pumps are usually supplied primed with S2003 synthetic primer.



## Example of pump coding:

**COV 23 - 15**



<b>1m (H<sub>2</sub>O)</b>	≈ 0,1 at	≈ 10 kPa	≈ 0,1 bar
<b>1 at</b>	≈ 100 kPa	≈ 10m (H <sub>2</sub> O)	≈ 0,1 MPa

TYPE	HEAD [m]	HEAD [kPa]	FLOW [l/min]	POWER [kW] (at 400V, 50Hz)	CURRENT [A] (at 400V, 50Hz)	BREAKER SETTING [A] (at 400V, 50Hz)
COV23-	20	200	28	0,55	1,1	1,6
COV33-	30	300	32	0,8	1,8	2,8
COV43-	40	400	32	1,35	2,6	4,0
COV54-	50	500	44	2,55	4,9	5,3
COV56-	50	500	60	3,2	6,1	7,3
COV63-	60	600	30	1,3	2,6	2,8
COV8.25-	80	800	25	1,9	3,6	3,7

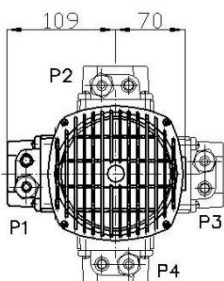
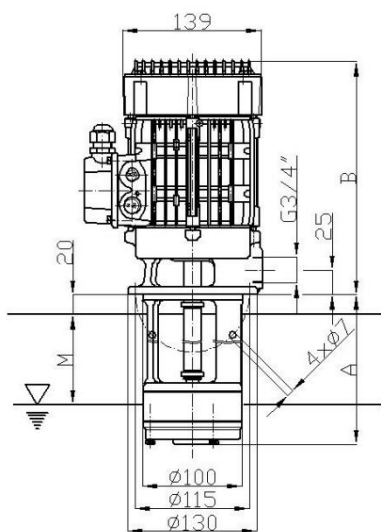


COV pumps dimensions

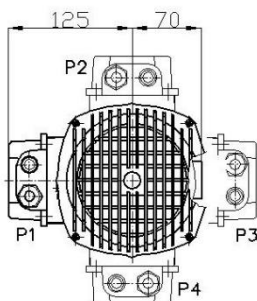
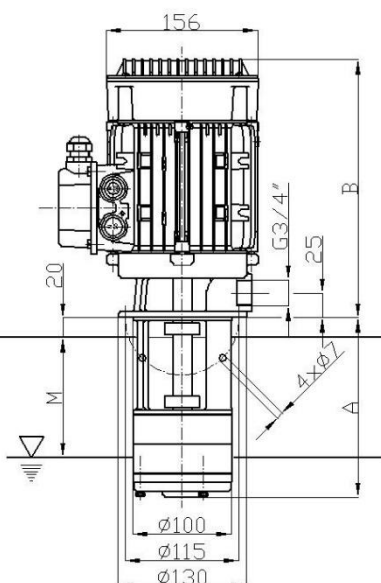
TYPE	A	B	M	Kg
COV23-07	90	235	10	8,7
COV23-15	100		90	9,0
COV23-25	120		190	9,6
COV33-10	100	284	40	13,1
COV33-18	180	262	130	13,4
COV33-28	280		180	14,0
COV43-18	180		230	22,2
COV43-25	250	295	310	22,7
COV43-39	390		310	23,8
COV54-18	180		100	22,1
COV54-25	250	320	170	22,6
COV54-39	390		310	23,7

TYPE	A	B	M	Kg
COV56-18	180	320	100	24,4
COV56-25	250		170	24,9
COV56-39	390		310	26
COV63-13	130	262	70	14,3
COV63-21	210		150	14,6
COV63-31	310		250	15,2
COV8.25-16	160	284	100	18,4
COV8.25-24	240		180	18,7
COV8.25-34	340		280	19,3

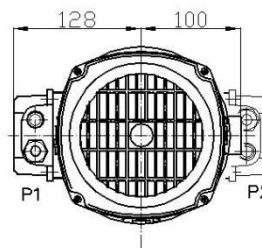
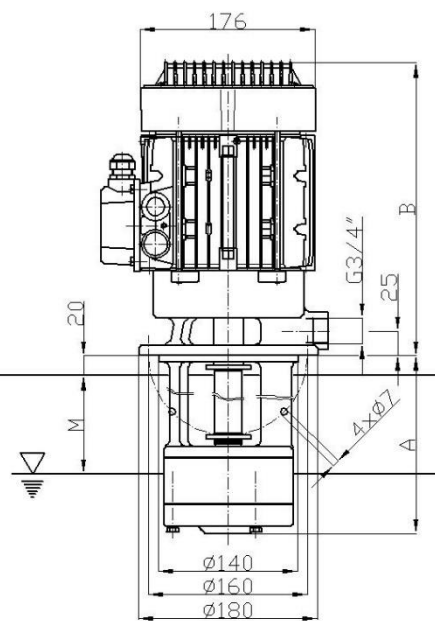
COV23



COV33, 63, 8.25



COV43, 54, 56



Used material

IMPELLER	CHAMBERS	CHAMBERS BOTTOM	PUMP BODY	SHAFT
Bronze	Cast-iron	Cast-iron	Al slitina	1.0060

# MULTISTAGE PUMPS COS SERIES

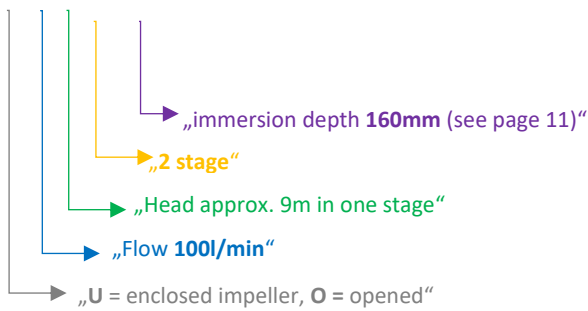


The pumps are flanged suitable for fitting directly onto the tank with the pumped liquid. The pumps are designed for pumping of cooling liquids with viscosity of max 30mm/s and maximum temperature 80°C. The pumps are not suitable for pumping of flammable or combustible liquids or used in explosive environments. The value of acoustic pressure is max 72dB(A).

- COSU 109:** Pump with enclosed impeller, 100l/10m in one stage
- COSU 158:** Pump with enclosed impeller,, 150l/8,5m in one stage.
- COSO 158:** Pump with open impeller, 150l/8m in one stage.
- COSU 227:** Pump with enclosed impeller,, 220l/7m in one stage
- COSO 227:** Pump with open impeller, 220l/6m in one stage
- COSO 312:** Pump with open impeller, 30l/12m in one stage

## Example of pump coding:

**COSU 1092 - 16**

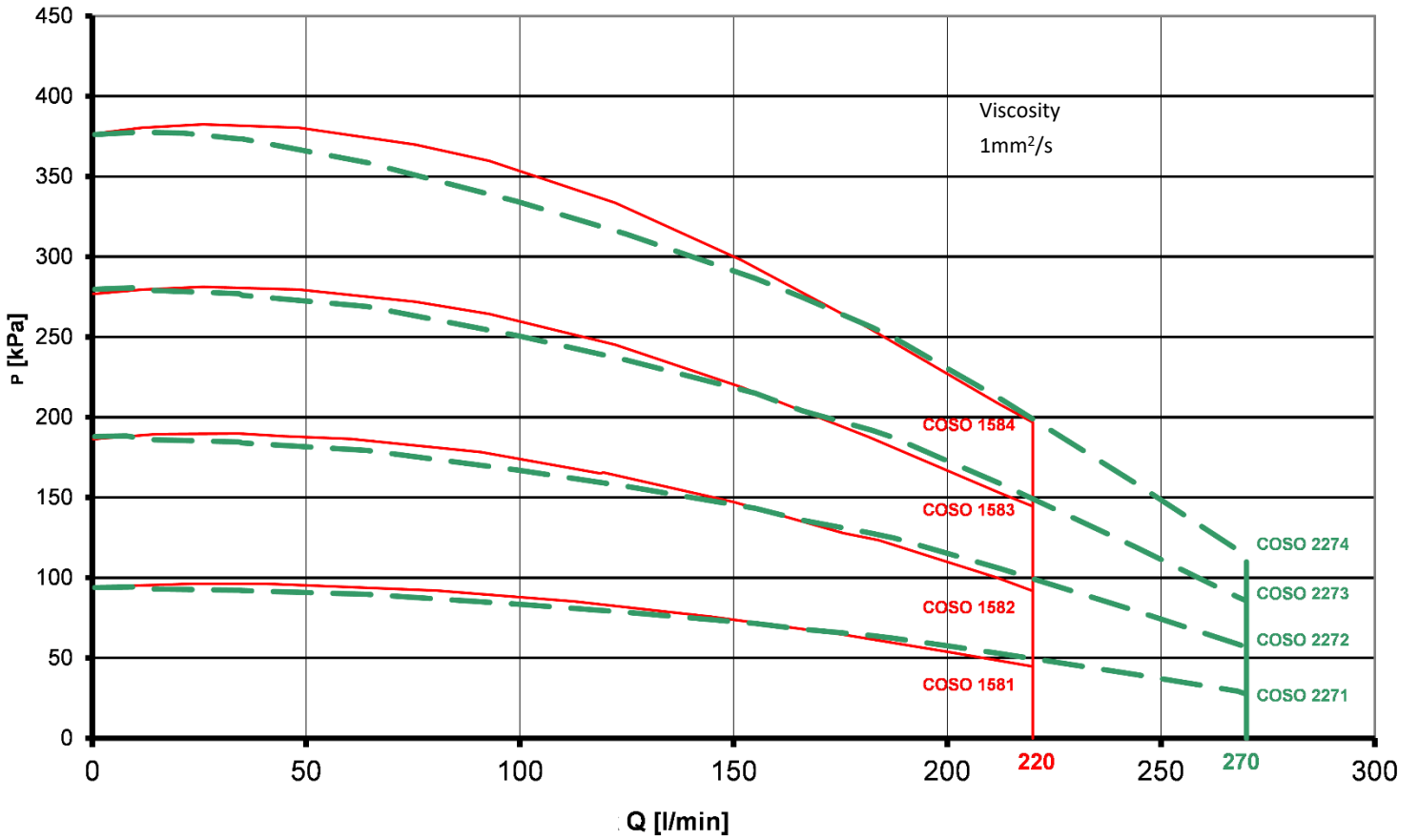


TYPE	HEAD [m]	FLOW [l/min]	POWER [kW]	CURRENT [A]	BREAKER SETTING [A] (400V,50Hz)
COSU 1091	10	100	0,42	1,1	1,4
COSU 1092	20		0,84	1,8	2,4
COSU 1093	30		1,23	2,3	3,1
COSU 1094	40		1,68	3,3	4,1
COSU 1095	50		2,10	4,0	4,9
COSU 1581	8,5	150	0,47	1,2	1,4
COSU 1582	17		0,94	2,0	2,6
COSU 1583	25,5		1,30	2,7	3,7
COSU 1584	34		1,98	3,5	4,8
COSO 1581	8	150	0,42	1,1	1,4
COSO 1582	16		0,85	1,8	2,6
COSO 1583	24		1,20	2,5	3,7
COSO 1584	32		1,80	3,2	4,8
COSU 2271	7	220	0,60	1,3	1,4
COSU 2272	14		1,20	2,3	3,7
COSU 2273	21		1,80	3,3	4,8
COSU 2274	28		2,40	5,2	7,0
COSO 2271	6	220	0,54	1,2	1,4
COSO 2272	12		1,09	2,1	3,7
COSO 2273	18		1,66	3,0	4,8
COSO 2274	24		2,18	4,7	7,0
COSU 3121	12	30	0,3	1,0	1,2
COSU 3122	24		0,6	1,3	1,5
COSU 3123	36		0,9	1,6	1,9
COSU 3124	48		1,2	1,9	2,3
COSU 3125	60		1,5	2,2	2,6

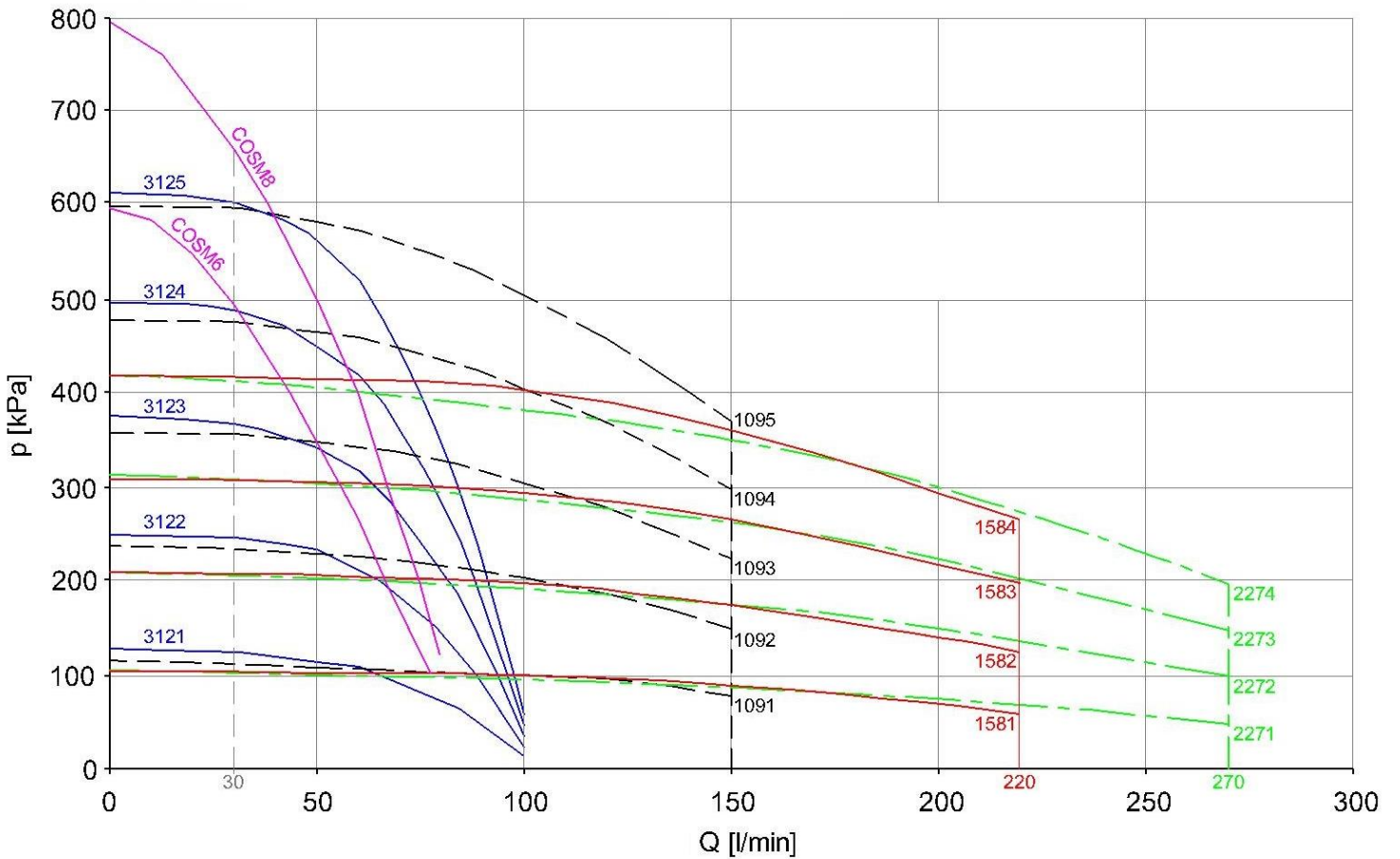
## Used materials

TYPE	PUMP BODY	IMPELLER	DIFFUSER	STAR	SHAFT
COSU(O)158..-, 227..-	Al alloy	Bronze	Al alloy	Al alloy	1.0060
COSU(O)109..-, 312..-	Al alloy	Bronze	Al alloy	PPE 30GF	1.0060

### Charasteristics of COSO pump



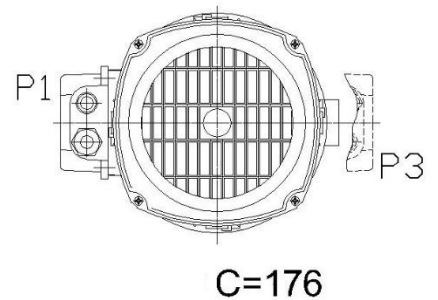
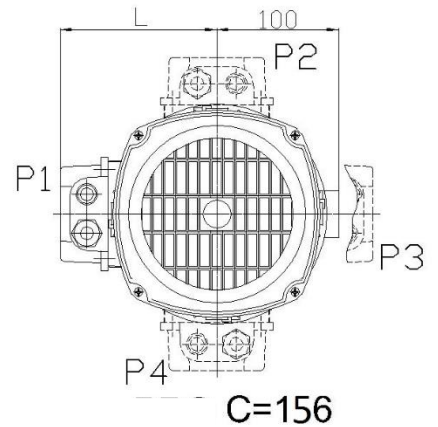
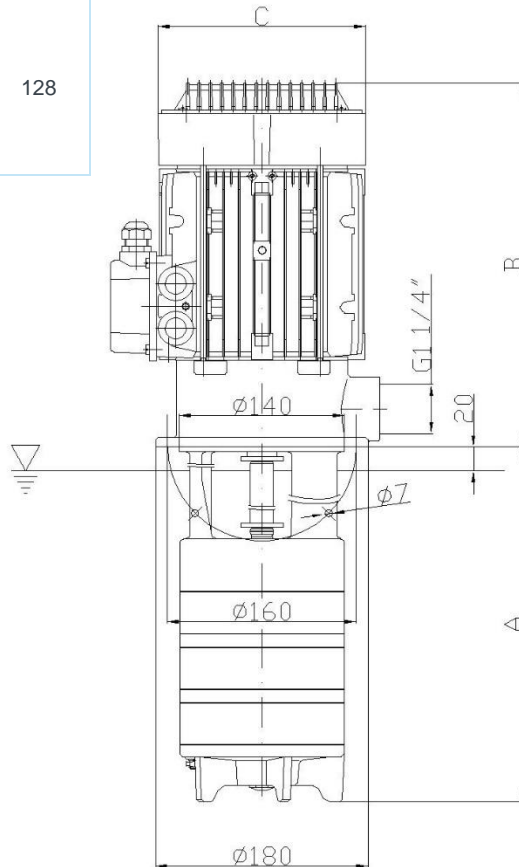
### Charasteristics of COSU pump



### COS pump dimensions

TYPE	A[mm]	B[mm]	C[mm]	L[mm]			
COS 1091-11	113	266	156	125			
COS 1091-19	189						
COS 1091-26	259						
COS 1091-34	339						
COS 1092-16	154						
COS 1092-23	230						
COS 1092-30	300						
COS 1092-38	380						
COS 1093-20	194						
COS 1093-27	270						
COS 1093-34	340						
COS 1093-42	420						
COS 1094-24	235				283	176	128
COS 1094-32	320						
COS 1094-39	390						
COS 1094-47	470						
COS 1095-28	275	308					
COS 1095-36	360						
COS 1581-12	116	266	156	125			
COS 1581-19	192						
COS 1581-26	262						
COS 1581-34	342						
COS 1582-16	159						
COS 1582-23	235						
COS 1582-30	305						
COS 1582-39	385						
COS 1583-20	202				283	176	128
COS 1583-29	287						
COS 1583-36	357						
COS 1584-24	245				308		
COS 1584-33	330						

TYPE	A[mm]	B[mm]	C[mm]	L[mm]		
COS 2271-20	198	266	156	125		
COS 2271-27	268					
COS 2271-35	348					
COS 2272-25	254	283	176	128		
COS 2272-32	324					
COS 2272-40	404					
COS 2273-30	301	308				
COS 2273-37	371					
COS 2274-35	348	324				
COS 3121-11	113	266	156	125		
COS 3121-19	189					
COS 3121-26	259					
COS 3121-34	339					
COS 3122-16	154					
COS 3122-23	230					
COS 3122-30	300					
COS 3122-38	380					
COS 3123-20	194					
COS 3123-27	270					
COS 3123-34	340					
COS 3123-42	420					
COS 3124-24	235					
COS 3124-32	311					
COS 3124-39	381					
COS 3125-28	275	283	176	128		



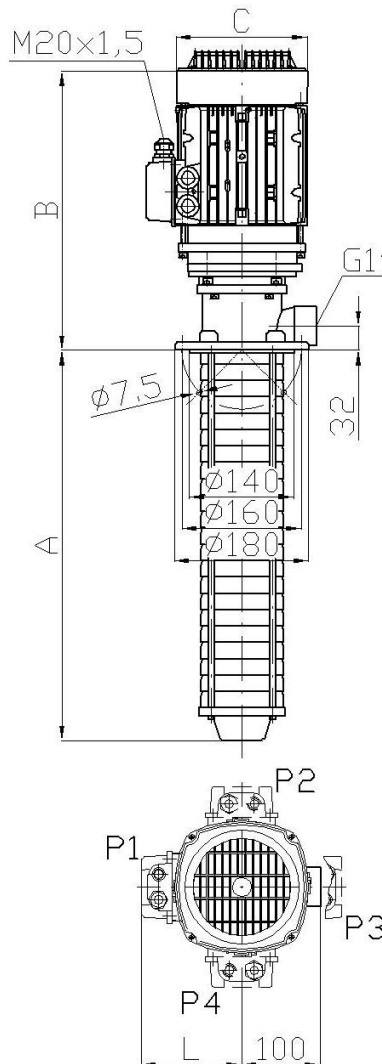
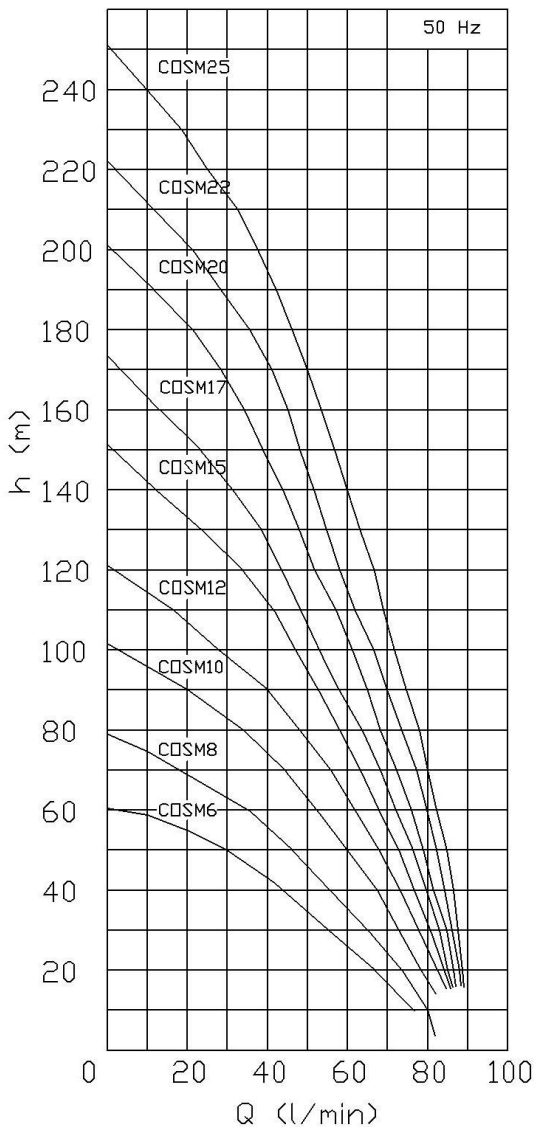
P1, P2, P3, P4 - position of the terminal block in relation to the output

# MULTISTAGE PUMP COSM SERIES



The pumps are flanged suitable for fitting directly onto the tank with the pumped liquid. The pumps are designed for pumping of cooling liquids with viscosity of max 30mm/s and maximum temperature 80°C. The pumps are not suitable for pumping of flammable or combustible liquids or used in explosive environments. The value of acoustic pressure is max 72dB(A)

TYPE	HEAD [m]	PRESSURE [kPa]	FLOW [l/min]	POWER [kW]	CURRENT [A] at 400V	BREAKER SETTING [A] at 400V	DIMENSIONS			
							A	B	C	L
COSM6	48	480	30	1	1,8	3,5	206	353	176	128
COSM8	63	630	30	1,2	2,3	3,5	248	353	176	128
COSM10	80	800	30	1,9	2,9	3,5	291	353	176	128
COSM12	98	980	30	2,35	3,3	4	333	353	176	128
COSM15	123	1230	30	2,65	4,1	4,9	396	378	176	128
COSM17	140	1400	30	2,65	4,5	5,4	438	378	176	128
COSM20	164	1640	30	3,1	5,2	6,2	501	401	176	128
COSM22	185	1850	30	3,4	5,8	7	543	408	200	140
COSM25	215	2150	30	3,85	6,5	7,8	606	408	200	140



## Used materials

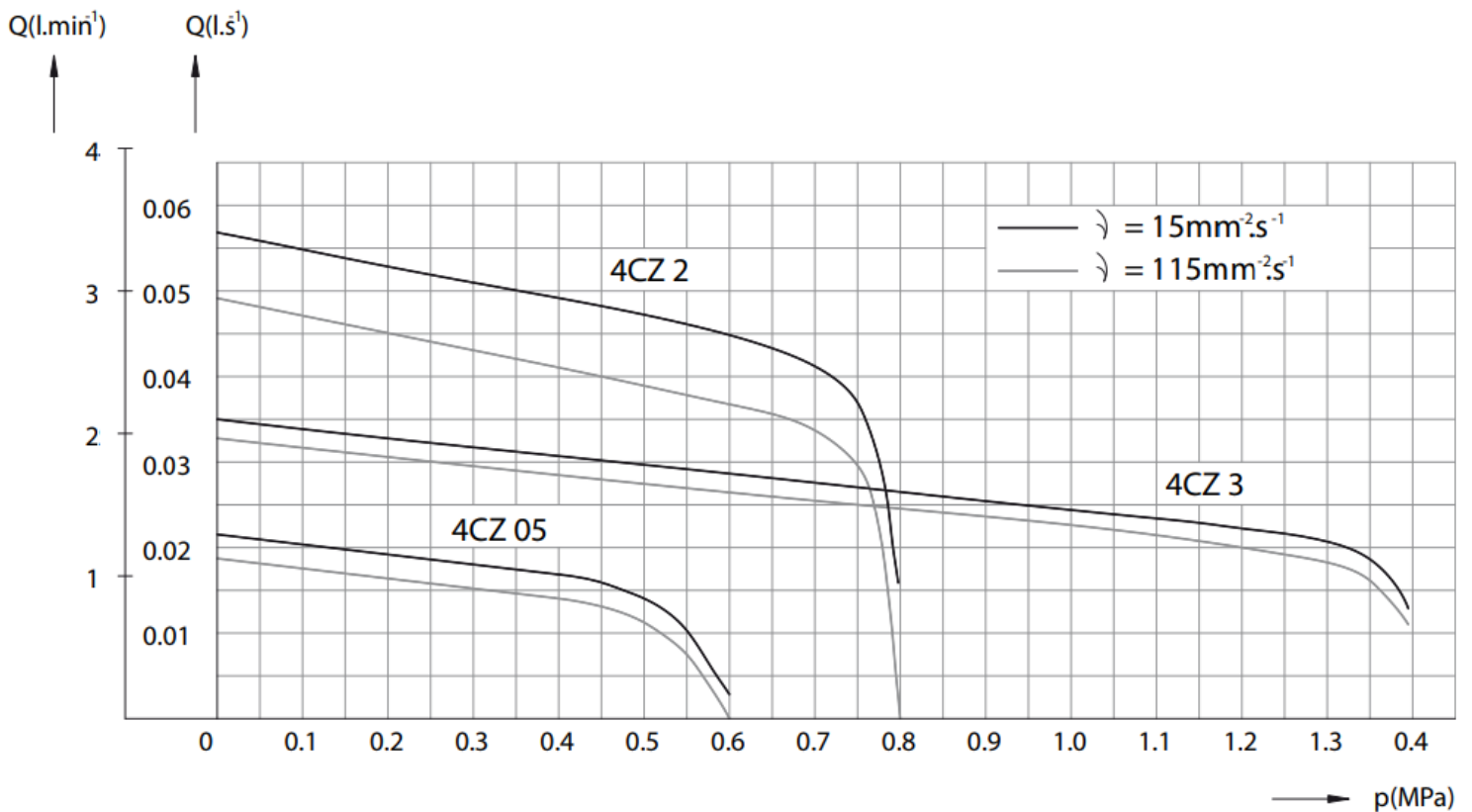
PART	MATERIAL
Pump body	Cast-iron
Impeller	Stainless steel
Diffuser	Stainless steel
Shaft	Stainless steel
Mechanical seal	SiC

# GEAR PUMPS CZ SERIES



The CZ Pump Series has been designed for pumping of cooling liquid for machine tools and especially for pressure lubrication of bearings. The viscosity of the pumped liquid can be max  $115\text{mm}^2\text{s}^{-1}$  and its temperature from  $0^\circ\text{C}$  to  $60^\circ\text{C}$ . The maximum size of impurities can be  $0.1\text{mm}$ . The pumps are flanged suitable for fitting directly onto the tank with the pumped liquid. The position of the suction opening in the tank must such that no impure oil gets circulated. The bypass tube must be positioned in the tank so it does not cause excessive ripple.

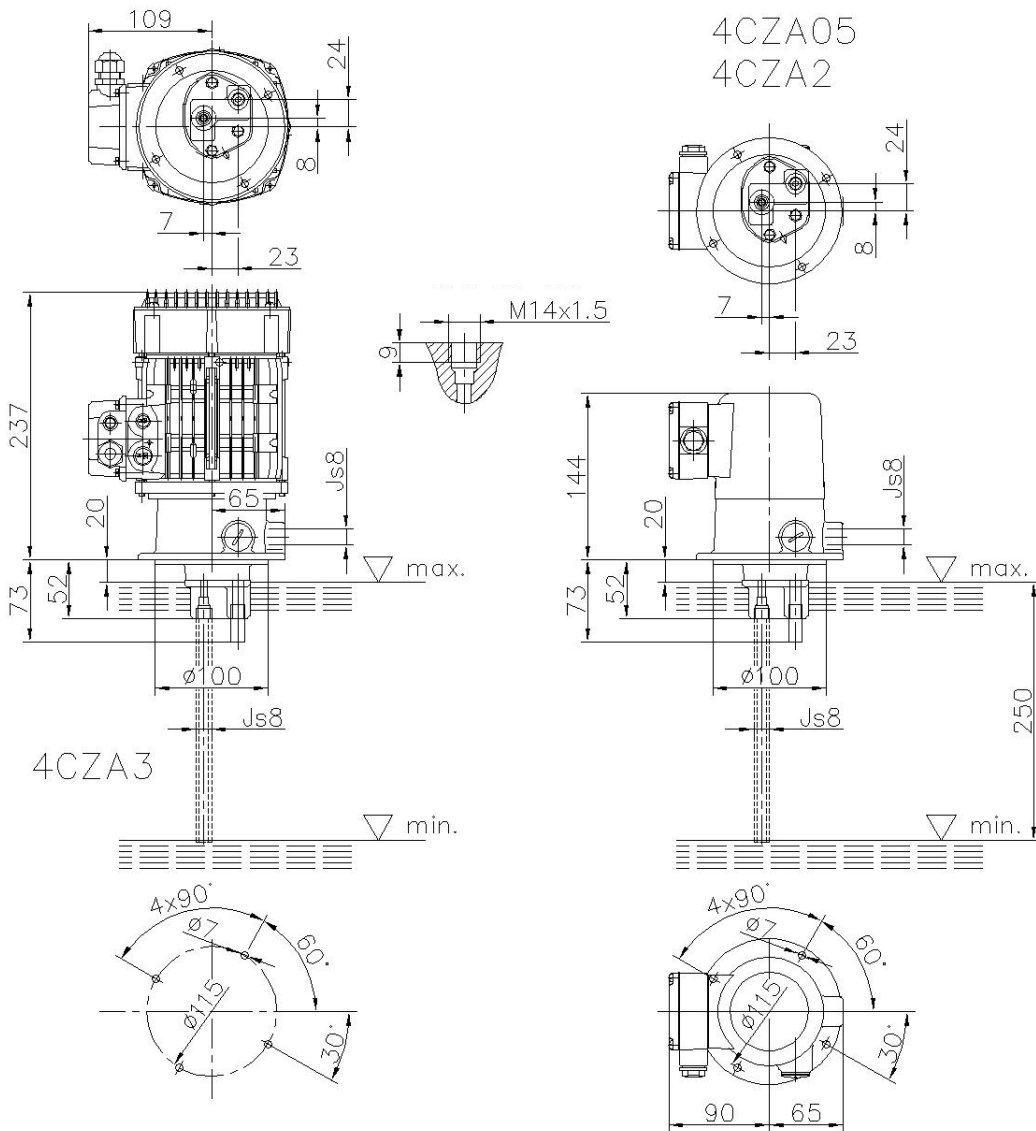
TYPE	HEAD [m]	PRESSURE [kPa]	FLOW [l/min]	POWER [kW]	CURRENT [A] at 400V 50Hz	BREAKER SETTING [A] at 400V 50Hz
4CZA05; 4CZB05	30	300	0,9	0,09	0,26	0,31
4CZA2; 4CZB2	50	500	2,4	0,12	0,29	0,35
4CZA3; 4CZB3	120	1200	1,2	0,2	0,68	0,82



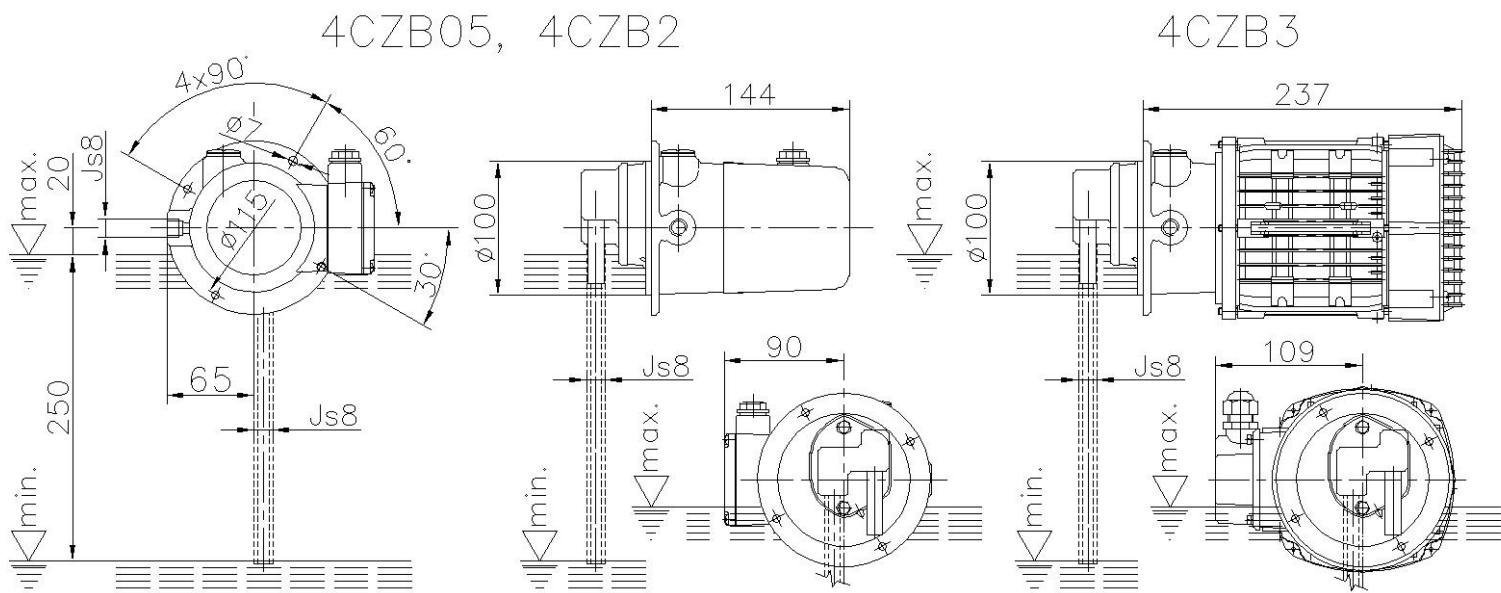
## Used materials

PUMP BODY	CHAMBER BOTTOM	IMPELLER 1	IMPELLER 2	SHAFT
Cast-iron	Cast-iron	1.0715	Cast-iron	1.1219

**Vertical design – 4CZA pumps**



**Horizontal design – 4CZB Pumps**



# Electric Pumps

COA, COP, COV, COS, COSM, CZ

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